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## **AMENDMENTS TO THE CLAIMS**

Please amend claims 1, 7, 11, 29, 32, and 36 and cancel claims 2 and 13, such that the status of the claims is as follows:

- 1. (Currently amended) A tunneling magnetoresistive stack comprising:
  - a first ferromagnetic layer;
  - a tunnel barrier layer comprising a titanium alloy oxide on the first ferromagnetic layer; and
  - a second ferromagnetic layer on the tunnel barrier layer, wherein the tunneling magnetoresistive stack exhibits a negative exchange coupling between the first ferromagnetic layer and the second ferromagnetic layer.
- 2. (Canceled)
- 3. (Original) The tunneling magnetoresistive stack of claim 2, wherein the oxidized titanium alloy includes a dopant.
- 4. (Original) The tunneling magnetoresistive stack of claim 3, wherein the dopant is an element of the group consisting of Nb, Cr, Mo, P, Si, V, W, B, and Co.
- 5. (Original) The tunneling magnetoresistive stack of claim 2, wherein the oxidized titanium alloy includes an oxide of a metal of the group consisting of aluminum, zirconium, and halfnium.
- 6. (Original) The tunneling magnetoresistive stack of claim 1, wherein the tunnel barrier layer also comprises a dopant.

- 7. (Currently amended) The tunneling magnetoresistive stack of claim 1, wherein the tunnel barrier layer comprises  $Ti_xAl_yO_z$ , wherein x, y, and z are greater than zero.
- 8. (Original) The tunneling magnetoresistive stack of claim 1, wherein the tunnel barrier layer comprises a combination of titanium, aluminum, and oxygen as represented in FIG. 6 as the line from  $TiO_2$  to  $Al_2O_3$ .
- 9. (Original) The tunneling magnetoresistive stack of claim 1, wherein the first ferromagnetic layer is a pinned layer.
- 10. (Original) The tunneling magnetoresistive stack of claim 1, wherein the second ferromagnetic layer is a free layer.
- 11. (Currently amended) A tunneling magnetoresistive stack comprising:
  - a first ferromagnetic layer;
  - a second ferromagnetic layer; and
  - a tunnel barrier layer between the first and second ferromagnetic layers, wherein the tunnel barrier layer is an oxide of a titanium alloy, and wherein the tunneling magnetoresistive stack exhibits a negative exchange coupling between the first ferromagnetic layer and the second ferromagnetic layer.
- 12. (Original) The tunneling magnetoresistive stack of claim 11, wherein the oxide of a titanium alloy includes aluminum.
- 13. (Canceled)

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- 14. (Original) The tunneling magnetoresistive stack of claim 11, wherein the first ferromagnetic layer and the second ferromagnetic layer each have a thickness in the range of 10Å to 200Å.
- 15. (Original) The tunneling magnetoresistive stack of claim 11, wherein the tunnel barrier layer has a thickness less than 30Å.
- 16. (Original) The tunneling magnetoresistive stack of claim 11, wherein the tunnel barrier includes a dopant.
- 17. (Original) The tunneling magnetoresistive stack of claim 16, wherein the dopant is an element of the group consisting of Nb, Cr, Mo, P, Si, V, W, B, and Co.

18-28. (Canceled)

- 29. (Currently Amended) A tunneling magnetoresistive stack comprising:
  - a first ferromagnetic layer having a first magnetization direction;
  - a second ferromagnetic layer <u>having a second magnetization direction opposite the first</u> magnetization direction; and
  - a tunnel barrier layer between the first and second ferromagnetic layers, wherein the tunnel barrier layer is an oxide, nitride or oxynitride of a titanium alloy including a dopant.
- 30. (Previously presented) The tunneling magnetoresistive stack of claim 29, wherein the tunnel barrier layer is a doped titanium alloy oxide.
- 31. (Previously presented) The tunneling magnetoresistive stack of claim 30, wherein the titanium alloy

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oxide includes an oxide of a metal of the group consisting of aluminum, zirconium, and halfnium.

- 32. (Currently amended) The tunneling magnetoresistive stack of claim 29, wherein the tunnel barrier layer comprises  $Ti_xAl_yO_z$ , wherein x, y, and z are greater than zero.
- 33. (Previously presented) The tunneling magnetoresistive stack of claim 29, wherein the magnetoresistive stack exhibits a negative exchange coupling between the first ferromagnetic layer and the second ferromagnetic layer.
- 34. (Previously presented) The tunneling magnetoresistive stack of claim 29, wherein the first ferromagnetic layer and the second ferromagnetic layer each have a thickness in the range of 10Å to 200Å.
- 35. (Previously presented) The tunneling magnetoresistive stack of claim 29, wherein the tunnel barrier layer has a thickness less than 30Å.
- 36. (Currently amended) The tunneling magnetoresistive stack of claim 29, wherein <u>further comprising</u> a the dopant is <u>selected from</u> an element of the group consisting of Nb, Cr, Mo, P, Si, V, W, B, and Co.
- 37. (Previously presented) The tunneling magnetoresistive stack of claim 29, wherein the first ferromagnetic layer is a pinned layer.
- 38. (Previously presented) The tunneling magnetoresistive stack of claim 29, wherein the second ferromagnetic layer is a free layer.